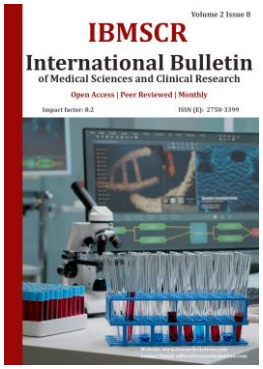

ORTHOPEDIC TREATMENT OF PARTIAL TOOTHLESSNESS PROSTHETICS USING MODERN THERMOPLASTIC PRODUCTS

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Annotation: The demand for dental orthopedic assistance in Russia makes more than 60% of the number of examined patients. With this, a share of use of removable dentures for rehabilitation of patients with partial or complete absence of teeth makes 40.2% of all types of prosthetics. Removable prosthetics remains an actual treatment option for patients with partial or complete absence of dentitions, along with use of non-removable structures including those with support on dental implants. Improvement of approaches to manufacture and design of dentures led to a considerable increase in the variants of combinations of materials and methods of their manufacture, and there appeared a possibility to optimize denture structures due to the ability to compensate for atrophic processes of the bone tissue. All this permits an orthopedist to achieve satisfactory results in treatment with use of removable dentures. In the given literature review, modern views on the variants of orthopedic rehabilitation of patients with use of removable laminar dentures are presented including their technological, functional, operational, phonetic, chewing peculiarities, and information on modern materials for manufacture of dentures is given.
Keywords: laminar dentures, orthopedic removable prosthetics after surgical interventions, chewing effectiveness, phonetic adaptation, occlusion, acrylplastic, thermoplastic materials.

Based on the literature data, it can be concluded that despite active development of the technological component of the manufacture of removable dentures, the basic principles of their design, methods of evaluation of the effectiveness and comfort of use have not undergone significant changes. However, there are a significant number of factors whose influence on the success of orthopedic rehabilitation with removable dentures has not been fully studied. For example, orthopedic dentists often do not analyze the volume of atrophy of the bone tissue of the jaws and design the basis of a dental prosthesis without taking these parameters into account. Another important issue that remains not considered is taking into account the design and architectonics of the resulting prosthesis and its effect on the speed and direction of respiratory flows in the oral cavity. All this creates a technological window that allows, due to compliance with the physiological requirements of the factors described above, to significantly increase the functional properties of the denture, to facilitate the patient's habituation to the prosthesis by reducing the adaptation period. The research conducted in this area of knowledge will permit to obtain both new scientific data and develop a number of practical recommendations aimed at improvement of the quality of orthopedic rehabilitation using removable dentures made of various materials. The occurrence of defects in the dentition of various lengths occurs due to various dental diseases. The leading place in terms of prevalence among all causes of tooth loss during life is occupied by dental surgical removal of teeth. Tooth extractions are often an inevitable outcome of caries complications[1] in the form of irreversible periodontal changes with the impossibility

of conservative treatment and, as a result, the impossibility to save individual teeth or parts of the dentition. Another, no less common cause is chronic periodontitis, which leads to a significant loss of bone tissue of the alveolar process of the jaws, and therefore tooth-preserving manipulations have either an insignificant or short-term effect due to the aggressive course of this disease. In this regard, in order to prevent the formation of chronic inflammation and against this background of persistent resorption of the bone tissue of the jaws, as well as a significant decrease in the dental health of patients, chronic periodontitis in the severe stage of the course is a direct indication for tooth extraction. Moreover, this nosology tends to be generalized, leading to multiple tooth extractions. Various traumatic situations, in particular mechanical injuries and non-gunshot lesions of the maxillofacial region in peacetime, also often end in the need for tooth extraction to prevent inflammatory complications and relieve pain in patients seeking dental care. In addition, traumatic situations in themselves lead to loss of teeth. Other reasons that are not inflammatory in nature, due to which the dentist needs to remove teeth, are oncological diseases of the maxillofacial region, which account for a significant percentage of all oncological diseases of the population. Inflammatory by nature nosologies that are the reason for the extraction of teeth are also periostitis, often complicated by osteomyelitis of the jaw bone tissue.

These diseases are often found in people with a reduced immune status, and this category can also include those patients in whom tooth extractions occur due to toxic necrotic lesions of the bone tissue, or patients receiving various types of treatment that lead to persistent resorption of the bone tissue of the jaws. The above causes of tooth loss significantly increase the need of the population for dental orthopedic treatment. At the same time, a large proportion of patients who need orthopedic restoration of dentition defects need to be treated with removable orthopedic structures. This is due to the fact that the impossibility of using fixed structures based on teeth or dental implants lies in the absence of conditions for their fixation due to the multiple absence of teeth, end defects of the dentition, deformation of the jaws and resorption of their bone tissue. The impossibility in some cases to apply methods of dental treatment based on dental implants is largely due to insufficient volume of jaw bone tissue due to its resorption, or other reasons associated with various absolute contraindications to dental implantation. In addition to the anatomical conditions that dictate the need for the use of removable dental structures, there are other reasons for the use of partial or complete removable lamellar dentures.

Currently, there is a wide variety of materials for the manufacture of removable lamellar dentures. One of the first and most widely used technologies for manufacturing lamellar prostheses is the technology for obtaining a dental prosthesis by polymerization of acrylic plastics. These plastics are chemically acrylates. The advantages of this material are that they have a relatively low percentage of side substances that irritate the oral mucosa, which will be discussed in more detail below, in addition, they have good color stability and a high level of chemical adhesion to artificial teeth that recreate the patient's dentition. Other advantages include the relative simplicity of working with this material and the ease of its processing. Thus, the total share of plate dentures made of acrylic plastics is about 80-90% of all types of dental polymers. The technology for the manufacture of dentures and acrylic plastics consists in the polymerization of plastic dough at a temperature of 80-110°C in a closed cell using a press. Plastic dough, in turn, is formed by mixing polymer powder and monomer liquid, which are included in acrylic plastic kits. The method of hot polymerization in the closed

space of a cuvette during compression molding of acrylic material is one of the most common and traditional methods for manufacturing laminar prostheses. Along with acrylic materials, there are ample opportunities for the use of thermoplastic and elastic polymers for the manufacture of laminar prostheses. These materials differ from classic acrylic ones in that they have the ability to change their shape in a controlled manner when placed in a higher temperature environment. Such materials include nylons, polyamides, ethylene vinyl acetates, polypropylenes, polyoxymethylenes. These physical properties have made it possible to expand the range of possibilities for the use of dental polymers and to produce more adaptive dentures in some cases. The manufacturing technology of thermoplastic and elastic materials, as a rule, differs from the classical technology of polymerization of acrylates.

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